

REMARKS

Review and reconsideration of the application in view of Applicants' amendments and remarks are respectfully requested. Applicants herein cancel claim 19. Applicants have amended claim 20. Claims 1-18 and 20 remain in the present application. The Examiner has allowed claims 1-18. The Examiner has presented the following rejections.

Claims 19 and 20 have been rejected under 35 USC §103(a) as being unpatentable over Applicants admitted prior art in view of Chen et al (US 5,716,714).

Claims 19 and 20 have been rejected under 35 USC §103(a) as being unpatentable Chen et al (6,696,158) in view of Hoffman et al (US 2002/0002921A1 and Chen et al (US 5,716,714).

Applicants have amended claim 20 to state the "primer ...epoxies applied on the outside". Support for this amendment is found on page 6, lines 27-30 of the specification.

A summary of the invention is provided. Much effort has been directed to the development and improvement of replaceable sleeves for fuser rollers. Typically, these sleeves are hollow and cylindrical in shape and are designed to slip over a mandrel that is also typically cylindrical. Hence, there are two cylindrical objects involved; the inner diameter of the sleeve sized for snug positioning around the outer diameter of the mandrel so that, when in motion, the sleeve rotates with the mandrel.

Sleeves have typically been made from a wide variety of conductive metals such as aluminum, anodized aluminum, steel, nickel, copper and the like. However, the Applicants point out on page 5, lines 17-25 of the application that there is a problem with these typical metals. Electroforming nickel, for example, tends to outgas as the temperature is raised to the temperature necessary to cure the base cushion layer or the topcoat layer over the sleeve and adhesion of the sleeve to the base cushion layer is compromised. Moreover, it is known in the art that copper and copper black oxide are soft metals and do not provide the stiffness and support ideal for the fuser members of the invention.

To overcome the problem, the present invention employs high temperature nickel, defined on page 5 of the application as “nickel that does not outgas, or release volatile compounds, at temperatures up to the maximum temperature required to cure the cushion layer and the topcoat elastomer layer over the fuser member. Such temperatures may be as high as, or even higher than 300°C”.

An important part of the present invention relates to the use of a primer consisting essentially of a silane coupling agent containing epoxies, which is applied on the outside of the sleeve to provide good bonding between the base cushion and the sleeve. A variety of primers and adhesives have been used for this purpose, but it has been found that surprisingly superior results have been achieved with this particular primer.

As shown in TABLE 1 on page 10 of the application, surprising improvements in the adhesion of the base cushion layer to high temperature nickel and bright chromate high temperature nickel are achieved using the primers of the present invention. With these materials, adhesion increases of eighteen to twenty fold were realized over copper, copper black oxide and electroformed nickel.

Previously, rollers adapted for use as either hard or compliant rollers required stiffening bands and other materials in order to achieve the desired range of properties. Such devices are not required with the claimed invention. The replaceable fuser member of the invention permits the flexibility to produce hard or compliant rollers with a minimum of layers and in a form such that the sleeve is readily replaced by the user. Accordingly, the present invention provides many advantages and improvements over the prior art and these improvements are attributable to the superior adhesion between the high temperature nickel and silicone rubbers or silicone resins or polymers. These improvements could not have been expected and were not taught or suggested by the cited references.

Applicants have cancelled claim 19. This removes the rejections thereto and the objection to the claim for a typographical error. In addition, Applicants assert that the rejection of claim 20 under 35 USC §103(a) as being unpatentable over Applicants admitted prior art in view of Chen '714 is not

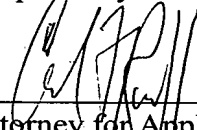
proper as claim 20 is not written in Jepson format. Furthermore with the amendment to claim 20, this rejection has been obviated.

Claims 19 and 20 have been rejected under 35 USC §103(a) as being unpatentable Chen et al (6,696,158) in view of Hoffman et al (US 2002/0002921A1 and Chen et al (US 5,716,714). Applicants respectfully traverse this rejection with respect to remaining claim 20. US 6,696,158 to Chen et al. discloses a fuser member, such as a fuser roller that is made from materials designed to provide improved toner release, mechanical strength and wear resistance. In particular, the invention relates to materials suitable for use as a toner release layer in a fuser member. As the Examiner concedes, this reference does not teach a sleeve nor does it teach the primer used in the invention. The Examiner cites Hoffman as teaching that a sleeve can be either steel, aluminum or nickel. However, there is no teaching in Hoffman that the metal be nickel that does not outgas, or release volatile compounds, at temperatures up to the maximum temperature required to cure the cushion layer and the topcoat elastomer layer over the fuser member or as Applicants have defined in the application "high temperature nickel". So the Hoffman reference fails to teach this element. This deficiency is not made up in Chen '714, which does not teach a sleeve.

For at least the reasons set forth above, Applicant submits all of Claims 1-18 and 20 are in condition for allowance. Prompt and favorable action is respectfully requested.

Should the Examiner require anything further, or have any questions, the Examiner is asked to contact Applicants' undersigned representative.

Respectfully submitted,



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If the Examiner is unable to reach the Applicant(s) Attorney at the telephone number provided, the Examiner is requested to communicate with Eastman Kodak Company Patent Operations at (585) 477-4656.